closely-packed tubes, which overlay the rectal portion of the intestine, and occupied nearly one-third of the general body-cavity.

On comparing the general structure of this animal with the account given by Mr. Peach, I found that his article dealt so little with anatomical points that it was impossible to say whether or no there was any real relation between his "Cotton-Spinner" and my specimens, which, like his, were of Cornish origin. There was, however, a physiological experiment that could be made, and which might, I hoped, be successful. In the description given by our modern master of Holothurian organisation, Semper says, in speaking of the Cuvierian organs: "The sticky property of these organs is known in the true Holothurians, and in England they have even given the name of the 'Cotton-Spinner' to *Holothuria nigra*." I attempted to draw out one of the tubes of the mass, and, as I hoped, I found it extend. I threw it into water, and I found that it swelled out. More accurate experiment showed that it could be made to elongate twelve times and to swell out in water to seven times its diameter. It was at once clear that I had before me the creature of whom Peach had written: "It is extremely irritable, and, on being touched or disturbed, throws out a bunch of white tapered threads about an inch in length and one-eighth in thickness." Peach goes on to say that they "soon become attenuated, either by the agitation of the water or the coming into contact with something;" but as he goes on to say that they stick to everything they touch, I doubt not that, when that thing is alive it tries to run away, till the moral effect of the gradually elongating and as regularly swelling threads paralyses it with fear. At Dr. Günther's suggestion I tested the strength of these elongated threads, and I found that, when so thin as to be barely visible, six were strong enough to hold up a weight of between 800 and 1000 grains.

I communicated a paper detailing the zoological and anatomical characters of this very rare form, which seems to be known only to the fishermen of Cornwall, to the Zoological Society at their meeting on May 20, and I direct attention to it in this more widely circulated journal because it seems to show in a very pointed way how from the absence of opportunity for investigating animals that live not deeper than twenty fathoms we do not only remain ignorant of the contents of our own seas, but that we have in this "Cotton-Spinner" an opportunity of testing the hypothesis of Semper as to the function of these Cuvierian organs, and of putting on the basis of scientific observation and experiment the "great detestation" in which, as Peach tells us, they are held by the fishermen. While Cuvier regarded the organs to which in later years he was made name-father as testes, and Jäger and the great majority of subsequent writers as kidneys, Semper, who had unexampled opportunities of watching and examining them in the Philippines, came to the conclusion that they were organs of offence or defence. To this conclusion the French naturalist Jourdan and the German Dr. Hamann have been led on the ground of histological observation; in England the only observations yet made have been such as are possible in a museum with specimens that have been in spirit for nearly twenty years. I earnestly hope that the line of investigation indicated by the facts that are here recorded will be soon followed out by one who is working in a marine biological laboratory on the British coast.

F. JEFFREY BELL

VISITATION OF THE ROYAL OBSERVATORY

THE visitation of the Royal Observatory, Greenwich, took place on Saturday last, when there was a very numerous attendance of astronomers and representatives of the allied sciences. The Report this year does not contain anything striking, but enables us to see how usefully and smoothly the work of the Observatory has been going on during the past year. Still novelties were not entirely absent, chief among them being the new Lassell reflector.

The new dome for this telescope was completed by Messrs. T. Cooke and Sons at the end of last March, and is in every respect satisfactory. It is thirty feet in diameter, covered with *papier-mâché*, on an iron framework, and turns with great ease. The shutter-opening extends from beyond the zenith to the horizon and is closed by a single curved shutter (3 feet 6 inches wide at the zenith and 6 feet wide at the horizon), which turns about a point in the dome-curb opposite to the shutter-opening, and runs on guiding-rails at the horizon and near the zenith, the curved shutter being continued by an open framework to complete the semicircle. This arrangement appears to leave nothing to be desired as regards ease of manipulation. After the completion of the dome, the carpenters' work on the flooring, &c., of the building and the attachment of the observing-stage (which is fixed to the dome) have necessarily occupied much time, and the building is hardly yet complete in all details. The equatorial has required a number of small repairs and general cleaning, some parts of the mounting having been probably strained in process of removal, and the bearings in particular having suffered from wear and subsequent disuse, so that it has been necessary to raise the instrument and regrind these in several instances. The mirror has been cleaned, and appears to be in very good condition as regards polish. The definition on stars seems to be very good as far as it has been practicable to test it before the mounting of the telescope has been put into proper order. The delay in the completion of the dome has necessarily delayed the work on the instrument, which is now rapidly advancing to completion.

First among the astronomical observations properly so called referred to by the Astronomer-Royal was the work done by the transit-circle. "There is no change of importance to notice in this instrument, which has been kept in good working order. A reversion-prism for use with the collimators as well as with the transit-circle is being made by Messrs. Troughton and Simms. The sun, moon, planets, and fundamental stars have been regularly observed throughout the year, together with other stars from a working catalogue of 2600 stars, comprising all stars down to the sixth magnitude inclusive which have not been observed since 1860. Considerable progress has been made in obtaining the requisite three observations of each star, and there is a good prospect that by the end of next year, when it is proposed to form a new Nine-Year Catalogue, the whole of the stars will be cleared off. The annual catalogue of stars observed in 1883 contains about 1550 stars."

The following statement shows the number of observations with the transit-circle made in the year ending 1884 May 20:—

Transits, the separate limbs being counted as separate observations	5213
Determinations of collimation error	303
Determinations of level error	360
Circle observations	5049
Determinations of nadir point (included in the number of circle-observations)...	353
Reflection-observations of stars (similarly included)	548

As regards the computations—

Clock times of transit over the true meridian, corrected for collimation, level and azimuth errors, are prepared to	1884 May 18
Clock errors and rates are determined to	May 11
Mean R.A.'s for 1884 January 1 are prepared to	May 11

In connection with this class of observation it is interesting to remark that the mean error of the moon's tabular place deduced from the meridian observations of 1883 has been brought down to + 0·03s. in right ascension and + 0″·42 in longitude. This result has arisen because in this year Prof. Newcomb's corrections to Hansen's tables have been applied in the *Nautical Almanac*, so that the comparison has reference to Hansen's theory without his empirical term of long period (intended to represent the direct action of Venus) and with an empirical alteration in the epoch of the inequality resulting from the indirect action of Venus. The mean error of Hansen's tables uncorrected was + 0·82s. in R.A. for the year 1882.

The most important reference to the spectroscopic work is the following :—

"For the determination of motions of stars in the line of sight, 412 measures have been made of the displacement of the F line in the spectra of 48 stars, 91 measures of the *b* lines in 19 stars, and two measures of the D lines in one star, besides measures of the displacements of the *b* and F lines in the spectra of the east and west limbs of Jupiter, and in the spectra of Venus and Mars, and comparisons with lines in the moon or sky spectrum made in the course of every night's observations of star-motions, or on the following morning, as a check on the adjustment of the spectroscope. Some preliminary measures have also been made of the F line in the spectrum of the Orion Nebula. The progressive change in the motion of Sirius, from recession to approach, alluded to in the last two Reports, is fully confirmed by numerous observations since last autumn, and a change of the same character is indicated in the case of Procyon. A discussion of the measures of all the stars observed here, on which I am now engaged, shows that the results of the four periods—1875 June to 1877 May, 1877 June to 1880 December, 1881 January to 1882 March 10, 1882 March 11 to 1884 March 31, in each of which the instrumental conditions were different—accord generally within the limits of the probable errors, and that there is no systematic change from recession to approach, so that the presumption against error arising from defective instrumental adjustment appears to be strong."

Passing on to another branch of the work at present undertaken by the Observatory, that connected with photographs of the sun with the view to determine the amount of spotted area, &c., we learn that two important changes have been made. First, the heliograph, which up to the present time has only given us pictures 4 inches in diameter, has been altered, as was suggested two years ago by the Solar Physics Committee, so as to take pictures of 8 inches. This necessitated a new micrometer which has already been constructed. Again, the photographs taken in India under the auspices of the Solar Physics Committee are now sent to Greenwich to be reduced with those of the previous series, and the result is a considerable increase in the number of days for which photographs are available. Thus in the year 1883 the 215 days of Greenwich are supplemented by 125 days of India, making a total of 340 out of 365 days. In 1882 we had Greenwich, 201, India 142, making up 343.

There is nothing new to remark with regard to magnetical work. We may state however that the magnetic elements for the past year were determined to be as follows :—

Approximate mean westerly declination	18° 25′.
Mean horizontal force	3·926 (in English units). 1·810 (in metric units).
Mean dip	67 31 10 (by 9-inch needles). 67 31 36 (by 6-inch needles). 67 31 59 (by 3-inch needles).

The doings of the Deal time-ball and Westminster clock are thus referred to :—

"As regards the Deal time-ball, after various delays the arrangement, referred to in the last Report, for sending a current to Deal and receiving a return-signal through the chronopher of the Post Office telegraphs, was brought into operation on February 29, and has worked well since. The change has necessitated some slight alteration in our arrangements in order that we may be able to receive the Westminster signal through the same wire which is now used for the Deal current and its return signal. There have been 16 cases of failure in the dropping of the Deal time-ball owing to interruption of the telegraphic connections, 12 under the old system, and 4 since the new arrangement with the Post Office. On 19 days the current was weak and required the assistance of the attendant to release the trigger, and on 9 days the violence of the wind made it imprudent to raise the ball.

"The errors of the Westminster clock have been under 1s. on 53 per cent. of the days of observation, between 1s. and 2s. on 30 per cent., between 2s. and 3s. on 13 per cent., between 3s. and 4s. on 3 per cent., and between 4s. and 5s. on 1 per cent."

THE NORTH CAPE WHALE

THE North Cape or Biscay whale belongs to the group of true *Balænæ*, or smooth whales, *i.e.* those whales which have no fin on the back or furrows along the throat, as is the case with the so-called fin-whale group. It has most in common with the South Sea whale (*Balæna australis*). Its systematic name is *Balæna biscayensis* (Eschricht).

The habitat of the North Cape whale is limited to the north temperate zone of the Atlantic Ocean, whereas the Greenland whale is found most frequently in the closer vicinity of the Pole. Along the coasts of Europe the North Cape whale used to be found from the Mediterranean to the sea north of Norway, as far as the Beeren Island. Its true home, was, however, according to earlier writers who have dealt with the whale-fisheries in the preceding centuries, between Iceland and Norway, its original name—the North Cape whale—being derived from its frequent appearance around that promontory some centuries ago.

It visited the coasts of Central and South Europe regularly during the winter months, its favourite haunt appearing to be the Bay of Biscay. There it began to be pursued very early—perhaps as far back as the eleventh or twelfth century. In the fourteenth century the whale-fishery was an established industry here. It was also, according to the Icelandic Saga, "Kongespeilet," written in the twelfth century, already at that period largely caught by the Icelanders. It was called by the latter *slätbag* (smooth-back), and it was in all probability the catching of the North Cape whale of which the bard Othar of Haalogaland, *i.e.* Nordland in Norway, gave such an interesting account before King Alfred the Great of England. He stated that its haunts were then the shores of Northern Norway.

The principal expeditions for catching the whale were, however, despatched from the Bay of Biscay, but as it became more and more scarce in this part, it was followed as far as Iceland, where the Biscay fishermen found formidable rivals in the old Icelanders. It was these expeditions to Iceland which brought the Greenland whale under the notice of the southerners, and from the beginning of the seventeenth century the Greenland whale fishery around Spitzbergen became the leading industry.

In the middle of the seventeenth century the Americans began to catch whales. The Biscay whale was then very plentiful around the east coast of North America, and from the ports of "New England" numerous expeditions